

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

Serial Number: 09/491,110

Filing Date: January 25, 2000

Title: POINTING DEVICE WITH ABSOLUTE AND RELATIVE POSITIONING CAPABILITYPage 2
Dkt: 450.129US2

information relative to the uniquely coded position.

32. (Amended) A joystick pointing device comprising:

a movable control stick;

a first gradient having a plurality of positions uniquely varying in intensity level, the first gradient operatively coupled to the control stick such that movement of the control stick on a first axis causes corresponding movement of the first gradient;

a fixed first sensor positioned over the first gradient to detect the intensity level of the position underneath the first sensor;

a second gradient having a plurality of positions uniquely varying in intensity level, the second gradient operatively coupled to the control stick such that movement of the control stick on a second axis causes corresponding movement of the second gradient;

a fixed second sensor positioned over the second gradient to detect the intensity level of the position underneath the second sensor, and:

[whereby] such that the intensity level detected by the first sensor and the intensity level detected by the second sensor relate to a unique position of the control stick and such control stick position information is communicated.

33. (Unchanged) The joystick pointing device of claim 32, further comprising:

a fixed first light source positioned over the first gradient to illuminate the position underneath the first sensor, and,

a fixed second light source positioned over the second gradient to illuminate the position underneath the second sensor.

34. (Amended) A joystick pointing device comprising:

a movable control stick;

a semispherical dome mounted axially to an end of the movable control stick, such that a bottom surface of the dome is convex and has a gradient having a plurality of positions uniquely varying in intensity level of a first color on a first axis and uniquely varying in intensity level of a

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

Serial Number: 09/491,110

Filing Date: January 25, 2000

Title: POINTING DEVICE WITH ABSOLUTE AND RELATIVE POSITIONING CAPABILITYPage 3
Dkt: 450.129US2

second color on a second axis;

a first sensor positioned under the bottom surface of the dome to detect the intensity level of the first color of the position above the first sensor;

a second sensor positioned over the bottom surface of the dome to detect the intensity level of the second color of the position above the second sensor; and

[whereby] such that the intensity level detected by the first sensor and the intensity level detected by the second sensor relate to a unique position of the control stick and such control stick position information is communicated.

35. (Unchanged) The joystick pointing device of claim 34, further comprising a light source to illuminate the position above the first sensor and the position above the second sensor.

36. (Unchanged) A joystick pointing device comprising:

a movable control stick;

a mechanism mounted to an end of the movable control stick; and,

a semispherical dome positioned underneath the mechanism, such that a top surface of the dome is concave and has a gradient having a plurality of positions uniquely varying in intensity level of a first color on a first axis and uniquely varying in intensity level of a second color on a second axis,

wherein the mechanism comprises:

a first sensor positioned above the top surface of the dome to detect the intensity level of the first color of the position underneath the first sensor;

a second sensor positioned above the top surface of the dome to detect the intensity level of the second color of the position underneath the second sensor; and the intensity level detected by the first sensor and the intensity level detected by the second sensor relate to a unique position of the control stick and such control stick position information is communicated.

37. (Unchanged) The joystick pointing device of claim 36, wherein the mechanism further

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

Serial Number: 09/491,110

Filing Date: January 25, 2000

Title: POINTING DEVICE WITH ABSOLUTE AND RELATIVE POSITIONING CAPABILITYPage 4
Dkt: 450.129US2

comprises a light source to illuminate the position underneath the first sensor and the position underneath the second sensor.

38. (Amended) A computerized system comprising:

a computer having at least a processor and a memory; [and,]

a joystick including:

a movable control stick,

a semispherical dome mounted axially to an end of the movable control stick and having a gradient having a plurality of positions uniquely varying in intensity level of a first color on a first axis and uniquely varying in intensity level of a second color on a second axis.

a first sensor positioned under the bottom surface of the dome to detect the intensity level of the first color of the position above the first sensor,

a second sensor positioned over the bottom surface of the dome to detect the intensity level of the second color of the position above the second sensor; and

wherein the intensity level detected by the first sensor and the intensity level detected by the second sensor relate to a unique position of the control stick and such control stick position information is communicated to the computer.

[pointing device having a movable control stick absolutely positionable via detection of one of a plurality of uniquely coded positions for each of at least one surface, the uniquely coded positions arranged in a gradient, the device conveying to the computer the uniquely coded position of each surface.]

39. (Amended) A pointing device comprising:

a housing; and,

a sensor disposed within the housing and positionable over a first gradient transposed over a second gradient, each gradient having a plurality of positions uniquely varying in intensity level, the sensor detecting the intensity level of the first gradient and the intensity level of the second gradient of the position underneath the sensor, [whereby] such that the detected intensity level of

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

Serial Number: 09/491,110

Filing Date: January 25, 2000

Title: POINTING DEVICE WITH ABSOLUTE AND RELATIVE POSITIONING CAPABILITYPage 5
Dkt: 450.129US2

the first gradient and the detected intensity level of the second gradient relates to a unique position of the device and information relative to such position is communicated.

40. (Amended) A pointing device comprising:

a housing;

a first sensor disposed within the housing and positionable over a first gradient having a plurality of positions uniquely varying in intensity level, the first sensor detecting the intensity level of the position underneath the first sensor; and,

a second sensor disposed within the housing and positionable over a second gradient having a plurality of positions uniquely varying in intensity level, the second sensor detecting the intensity level of the position underneath the second sensor, [whereby] such that the intensity level detected by the first sensor and the intensity level detected by the second sensor relates to a unique position of the device and information relative to such position is communicated.

41. (Unchanged) The pointing device of claim 40, further comprising:

a first light source disposed within the housing to illuminate the position underneath the first sensor; and,

a second light source disposed within the housing to illuminate the position underneath the second sensor.

42. (Unchanged) The pointing device of claim 41, wherein each of the first and second light sources comprises a light-emitting diode (LED).

43. (Unchanged) The pointing device of claim 40, further comprising a light source disposed within the housing to illuminate the position underneath the first sensor and the position underneath the second sensor.

44. (Unchanged) The pointing device of claim 40, wherein the first gradient is transposed over the second gradient.

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

Serial Number: 09/491,110

Filing Date: January 25, 2000

Title: POINTING DEVICE WITH ABSOLUTE AND RELATIVE POSITIONING CAPABILITYPage 6
Dkt: 450.129/US2

45. (Unchanged) The pointing device of claim 40, wherein the position underneath the first sensor is substantially coincident to the position underneath the second sensor.

46. (Unchanged) The pointing device of claim 40, wherein each gradient is a color gradient such that the plurality of positions uniquely vary in intensity level of color.

47. (Unchanged) The pointing device of claim 46, wherein the first gradient is a color gradient of a first color and the second gradient is a color gradient of a second color.

48. (Unchanged) The pointing device of claim 46, wherein the first sensor includes a color filter matching the first gradient and the second sensor includes a color filter matching the second gradient.

49. (Unchanged) The pointing device of claim 40, wherein each gradient is a gray-scale gradient such that the plurality of positions uniquely vary in shades of gray.

50. (Unchanged) The pointing device of claim 40, wherein the pointing device is a joystick.

51. (Amended) A pointing device comprising:
a housing;
a first sensor disposed within the housing and positionable over a first surface, the surface having a plurality of uniquely coded positions arranged in a gradient, the first sensor to detect the uniquely coded position underneath the first sensor;
a second sensor disposed within the housing and positionable over a second surface, the surface having a plurality of uniquely coded positions arranged in a gradient, the second sensor to detect the uniquely coded position underneath the second sensor; and
[whereby] such that the position detected by the first sensor and the position detected by the second sensor relates to a unique position of the device and information relative to such position is communicated.